Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
1.9
EX892ESc

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
RECEIVED
APR 19 1973
PROCUREMENT SECTION
CURRENT SERIAL RECORDS

Earning a living with SHEEP

ESC-576

February 1973 ▪ Extension Service,
U.S. Department of Agriculture

382683

EARNING A LIVING WITH SHEEP

Table of Contents

Page

Summary and Conclusion - - - - 1

Introduction - - - - 3

Present Situation - - - - 3

Returns from Sheep Compared with Returns from Other Livestock Enterprises - - - - 6

Possible Systems for U. S. Sheep Production in the Future - - 8

Improved Returns Through Increased Lamb Production - - - - 10

Marketing - - - - 13

Proposal for an Integrated Sheep Production and Marketing System - - - - 14

Summary and Conclusion

Many economic studies indicate that it is difficult for farm or ranch operators to earn a satisfactory living from the production of wool and lamb under traditional methods of management. Most information indicates returns to labor and management considerably less than the $4 per hour assumed by this author to be a minimum return to the caliber of labor and management required to operate a sheep production unit. The basic reason for this is the low margin of return per ewe and the limited number of ewes which can be handled per man under traditional systems of sheep management. Consequently, sheep operations do not compete favorably with some other livestock and crop enterprises in returns per hour to labor and management under current conditions in many areas of the country.

In the marketing sector, high prices to the consumer for lamb are compounded by the lack of availability of lamb in many areas of the country. Also, wool prices have been declining because of lower wool use due to the competition from synthetic fibers.

In this report, possible avenues for solutions to some of the above problems facing the sheep industry have been suggested.

In the production sector, 10 Model Sheep Management Systems have been prepared for flocks ranging in size from 100 to 6,000 ewes. These systems are designed to utilize the latest in management information related to accelerated lambing programs, low cost feed supplies, and improved building and equipment designed for increased profit.

A closer examination of one of these systems, a 1,200 ewe operation designed for intensive management and a one-man or one family operation, reveals that returns above cash costs are estimated to range from $17,200 to $32,800 with an expected return above cash costs of $25,600. After deducting charges for depreciation and 10 percent interest on average investment, the operator is expected to earn $7,800 per year for his labor and management. To put it another way, if he pays himself a wage of $10,000 a year ($4/hr.), he is expected to earn 8.2 percent on his average investment in land, livestock, buildings, and equipment. In general, flocks smaller in size than 1,200 ewes tend to exhibit lower levels of return to labor and management while larger size flocks tend to exhibit somewhat higher returns.

In order to attempt to overcome some of the apparent difficulties in the present sheep production and marketing system such as erratic supply, high costs of handling, transportation and processing, and poor availability in some areas, consideration should be given to designing and developing an integrated sheep production and marketing system. This system would begin with determination of market requirements. Production and processing facilities would be geared to meet this market demand. It is envisioned that a producer group of 80 to 100 producers could provide ready-to-sell lamb cuts (chops, legs, etc.) either in fresh or frozen form possibly direct to chain stores by utilizing an owned or custom-hired slaughtering and fabricating plant. Another alternative could be a contract arrangement with an existing packer. Much research needs to be done in order to synthesize such a system.

The author believes it would be a worthwhile effort in the attempt to improve the possibilities for sheep production in the United States. This is especially true in light of the fact that lamb is rapidly becoming a speciality product, highly dependent upon the influence and efforts of the retail distribution system in order to secure its fair share of the expanding market for red meats.

It is hoped that this report will stimulate additional discussion and research on other more advanced and more efficient systems of lamb production and marketing aimed at making it possible for production and marketing of sheep to continue in the United States.

EARNING A LIVING WITH SHEEP

By James T. Hall[1]

[Management, income]

576, 33p. FEB 1973.

Introduction

While most other livestock products in the United States are expanding total production or at least declining only slightly, sheep production has declined sharply. For example, the annual lamb crop fell from 21 million head in 1960 to 13.4 million head in 1970--a drop of over 36 percent in 10 years. During the same period, wool production has decreased over 100 million pounds per year. The decline in the total number of stock sheep coupled with no significant increase in production per unit has resulted in a major decrease in total output of lamb and wool.

Some observers may conclude that this has merely been the declining phase of a 12 to 15 year cycle, and that U.S. sheep numbers will begin to increase in the near future (Chart 1). However, the long-term trend in U.S. sheep numbers has been down since 1942, a period of 30 years, more than twice the length of the usual sheep cycle (Chart 2).

What are the basic reasons for this decline in sheep production in the United States? There are many reasons that can be and are given, such as: (1) increased problems with predators; (2) lack of suitable labor; (3) substitution of synthetic fibers for wool resulting in a limited future for wool; (4) lower per capita consumption of lamb; (5) lack of prestige attached to sheep production as compared to other livestock enterprises, especially beef; (6) increasing foreign competition; and (7) little improvement in production per ewe.

All of the reasons above are part of the answer, but they cannot fully explain the decline in U.S. sheep production. This publication will attempt to explore another aspect of the problem of sheep production in the U.S.--that of the opportunity, or lack of it, to earn a living by raising sheep.

I PRESENT SITUATION

Some economists have privately questioned whether or not any sheep will be produced in the U.S. in the not too distant future. A simple projection of the trend since 1942 when U.S. sheep numbered nearly 50 million head compared with less than 16 million in 1972 would quickly lead to this conclusion (Chart 2).

---

[1] Economist, Farm Management, Extension Service, USDA, Washington, D. C. 20250.

This continues to be true despite the fact that recent prices for lamb have been higher than at any time since the early 1950's. This indicates that under current production systems, even at these relatively high prices for lamb, profits are not sufficient to stimulate increased production. (Federal wool payments have also been at a record high.) At the same time, lamb and wool are in danger of being priced out of the market in relation to competing products. Retail price of lamb has exceeded that for beef almost continuously since 1965 and has been higher than the price of pork at the retail level since 1947 (Chart 3).

There is undoubtedly some correlation between the high price of lamb relative to other red meats and the fact that per capita consumption of lamb has declined nearly 40 percent since 1947.

The price difference between wool and competing synthetic fibers has gradually widened. For example, dacron which was selling at the same price as wool in 1962 was less than half the price of wool in 1970 (Chart 4).

From 1962 to 1971, per capita use of wool in the United States declined from 2.3 pounds per capita to less than 1 pound per capita, a drop of over 60 percent.

Returns from sheep have been quite low in recent years (Table 1). It should also be noted that many of these returns were calculated in years when lamb prices were above average. (Prices for lamb averaged $24 per cwt. in the 1965-69 period.) From the information in Table 1 in regard to return to all labor and management per ewe per year, it is apparent that sheep enterprises as presently operated have a low margin of return per unit, that is, per ewe. If a farm businessman is to earn $10,000 per year from a sheep operation under these conditions, the number of ewes per man needed would range from 727 (Ohio) to more than 3,700 (Idaho).

Only a small percentage of U.S. sheep flocks at the present time contain this many ewes. Ninety percent of the U.S. flocks are so-called "farm flocks" which average less than 40 head. These 90 percent produce only about 35 percent of the total U.S. lamb and wool production.

Approximately 20 percent of the lambs are produced by flocks of about 1,000 head of ewes. These are usually not range flocks but are kept in fenced areas and managed much the same way as the farm flocks. Such flocks are common in the Plains States and in the Southwest.

The third group are range or migatory flocks which are moved from place to place to graze, much as the nomadic sheep flocks of the world have done for centuries. These flocks tend to be large, usually 1,800 to 3,000 head, and occasionally an operation will contain 12,000 to 15,000 head. Flocks graze part of the year on public lands under the care of a herder. Most of these flocks are found in the rugged mountainous and desert areas of the Western States.

The majority of flocks other than range flocks are not specialized sheep operations but sheep are kept as a supplementary, complementary, part-time, or recreational enterprise. One reason for this is that flocks of less than 1,000-1,200 cannot provide for a satisfactory level of income for the operator and his family unless he is engaged in producing pure-bred breeding stock.

Some smaller sheep flocks are kept to salvage forage, by-products, stubble, etc., and to utilize off-season labor which would have little or no alternative use. These flocks are complementary to main income producing activities of the farm and may have a greater return to labor and management per ewe than indicated in Table 1 because of low cost feed and little alternative use for labor.

Other small to medium sized flocks are maintained in an effort to increase farm returns even though they may compete somewhat with other enterprises for feed, labor, and facilities. These supplementary enterprises would tend to have returns similar to those reported in Table 1. These flocks are often forced out as part of the farm business when other farm enterprises are expanded and intensified.

Part-time and recreational or hobby flocks also constitute a factor in the overall sheep industry picture. These flocks may or may not be looked upon as income producers; but probably are most often considered as "cost reducers" or pets by non-farm rural families. In these cases, economic returns are not a major reason for keeping sheep.

To summarize, a majority of the sheep in the United States are produced by operators who do not look to their sheep flock as the major source or even one of several important sources of income. An estimated 95 percent of all present U.S. sheep flocks do not qualify as "adequate economic sheep production units"1/ on a full-time basis.

1/ An adequate economic sheep production unit is defined as one which is likely to return to the operator for his labor and management an amount equal to or greater than he can earn from alternative uses of his time and abilities in either on- or off-farm employment.

It seems apparent that a major reason sheep production is declining in the United States is that, under present systems of sheep production, it is very difficult for the sheep producer to achieve adequate returns for his labor and management.

II RETURNS FROM SHEEP COMPARED WITH RETURNS FROM OTHER LIVESTOCK ENTERPRISES

Despite generally lower than desirable returns as outlined in Section I, some large, specialized sheep production units have exhibited good returns in recent years when compared with other types of commercial farms. For example, the migatory sheep ranches of Utah and Nevada have exhibited favorable returns to labor and management when compared with returns to other ranches in the Western area. In 1968 and 1969, returns averaged $5,678 and $8,480 respectively for the Utah and Nevada migratory sheep ranches while in the same period returns from Northern Rocky Mountain cattle ranches located in much of the same area of the country were only $2,989 in 1968 and $4,828 in 1969 (Table 2). However, it should be noted that while returns have been higher for the Utah and Nevada sheep ranches in more recent years, during the 1960-64 period the returns for the sheep ranches were lower than those for the Northern Rocky Mountain cattle ranches.

These Utah and Nevada migratory sheep ranches are large, well managed operations with an average of 2,400 sheep per ranch compared with the average U.S. flock size of less than 100 sheep. Even these units are coming under pressure from predator losses, lack of suitable herders, increasing transporation costs, higher rental rates for leases on public lands, and low wool prices. Because of these factors, sheep numbers have been declining even in the Utah and Nevada area, but not as rapidly as the decline for most other major sheep producing States or for the U.S. as a whole (Table 3).

Sheep numbers declined 21.7 percent from 1961 to 1970 in the Utah and Nevada area compared with 38.4 percent decline in total U.S. sheep numbers.

Oregon sheep numbers on the other hand declined 47 percent in the 1961-70 period. Returns from sheep enterprises in Oregon apparently do not compete well with other farm enterprises in that State when compared on a return to labor-management basis (Table 4). This may be the major cause of the rapid decline in Oregon sheep numbers. Similar conditions exist in Iowa (Table 5).

Economic studies conducted in Wyoming, where sheep numbers declined only 15.7 percent in the 1961 to 1970 period, indicate that returns from sheep (although low) were comparable to or superior to returns from cattle ranching in that State. Data adapted from these studies by Stevens (11&18) indicate labor income per cattle unit of -$10.68 to -$16.03 for Wyoming beef cattle ranches in 1965 and labor income per ewe of -$1.62 (equivalent to -$8.10 on an animal basis) for Wyoming sheep ranches in 1964.

Data reported by Boykin and Forrest (19) indicated that in 1965 Southwestern Texas ranches with a higher proportion of sheep than cattle or goats tended to exhibit a slightly higher return on investment.

However, their data also indicated that improved return on investment was closely related to total number of animal units per ranch. Ranches with a high proportion of sheep tended to be larger in terms of animal units. Ranches with over 50 percent of total animal units represented by sheep average 617 animal units, compared with an average 206 animal units for ranches with less than 50 percent of total animal units represented by sheep. Boykin and Forrest concluded that net income per animal unit was higher on those ranches which had more than 45 percent cattle. The conclusion may be drawn that sheep ranchers have compensated for low returns per animal unit as reported in Table 1 by increasing the number of animal units per ranch.

These studies by Stevens and Boykin and Forrest do much to explain the difference in the decline of sheep numbers since 1961 in Texas and Wyoming. In Texas where sheep numbers declined 36.6 percent, sheep appeared to be less profitable than cattle. In Wyoming where sheep appeared to be more profitable than cattle, the decline in sheep numbers from 1961-70 was only 15.7 percent.

To summarize, it seems apparent that sheep have not been competitive under traditional management methods with other livestock enterprises from an economic standpoint in those States where there are several other alternative enterprises. It also appears that where other alternatives are limited such as in the range areas in the Western U.S., indirect economic factors[2/] overshadow nonexistent or slight direct economic advantages that sheep may offer, resulting in declining sheep numbers even in these areas. It seems likely that these long-term declines will continue unless methods can be developed to greatly improve the level of returns from sheep production so that the sheep producer can achieve a level of return for his labor and management as good as or better than that from alternative farm enterprises or off-farm employment.

[2/] These indirect economic factors may include lack of suitable herding labor, predator problems, lower projected demand for lamb and wool, etc.

III POSSIBLE SYSTEMS FOR U.S. SHEEP PRODUCTION IN THE FUTURE

In order for lamb and wool to be more competitive in price and for sheep production to be profitable enough to attract and maintain young progressive agri-businessmen, significant changes must be made in the systems utilized to produce (and market) lamb and wool. Basic to improved performance of the sheep production system is increased output per ewe and per man. Increased output per ewe can probably best be accomplished in the medium to the long run by genetic improvement which will result in more multiple births per ewe (twins, triplets, etc.). This may need to be coupled with artificial rearing of the extra lambs to greatly increase output per ewe. The development of suitable milk replacers allows rearing of extra (or orphan) lambs at a feed cost of about 16 cents per pound (23).

In the short run, accelerated lambing programs appear to offer some promise of increasing production per ewe with the present genetic base. Kansas researchers, Arehart and Banbury (20), reported an increase of 35 to 63 percent in lambs weaned per ewe under an accelerated lambing program (Table 6). In this experiment, returns above feed costs per ewe also improved markedly--$4.50-$6.53 (41 to 60 percent) depending upon the feeding regime (Table 7). If in this case it is assumed that all other costs except labor and feed are $10 per ewe for once a year lambing and $12 per ewe under accelerated lambing conditions, net returns to labor and management per ewe would be $0.93 for once a year lambing and from $3.43 to $5.46 per ewe under accelerated lambing. Net returns to labor and management then would be 286 to 487 percent greater for accelerated lambing than for once a year lambing!

Data adapted from other sources indicate higher ewe returns for labor and management from accelerated regimes. Moore and Allen (2) indicate a return to labor and management of $12.31 per ewe. Kensing (21) estimated returns of $15.08 per ewe for accelerated lambing programs. However, even at these higher levels of returns, a considerable number of ewes must be handled per man in order to produce a satisfactory income for the agri-businessman engaged in sheep production.

Labor Efficiency

Hours of labor required reported by various sources has varied widely from 1.6 to 7.5 hours per ewe per year (Table 1). It seems clear that a high level of labor efficiency is needed in order to enable a large number of ewes to be kept per man. This, in turn, would make it possible for an adequate income to be earned from sheep operations to either (1) adequately pay hired labor and allow a return to management; or (2) provide the owner-operator with the satisfactory standard of living for him and his family.

For the purposes of this analysis, it is assumed that a man year of labor is equivalent to 2,500 hours or roughly 50 hours per week for 50 weeks. This allows two weeks for illness, vacation, etc. Given the relatively low returns per ewe--$5 to $10 in most cases--one man must be able to care for 800 to 1,200 ewes (and their lambs) per year in order to obtain a satisfactory level of income. For example, 1,000 ewes at $10 per ewe return to labor and management equals $10,000 per year; 1,200 ewes at $8 per ewe equals $9,600 labor income. Even at the very highest level of return to labor and management per ewe, $15 per head, it would require 700 ewes per man to return $10,500 income to labor and management.

It is necessary, therefore, to design buildings and equipment which provide for high degree of labor efficiency. The outlines for sheep production models attempt to provide ideas for both reproductive and labor efficiency in order to obtain an adequate return to good levels of management.

The basic purpose of these system outlines is to provide a discussion piece or a starting point in the development of localized or individual sheep management systems. It is stressed that they are not "patterns" that are applicable to any and all situations. They are an attempt to provide guidelines and ideas for developing profitable sheep management systems either for individuals or for a local area where feed, labor costs, markets, etc., are fairly homogeneous. Listed below are brief descriptions of 10 Model Sheep Management Systems prepared for the Sheep Industry Development Program, Inc., by Dr. D. E. Hogue, Cornell University, and this author.

Model Sheep Management Systems

(1) 100 ewes, early lambing once-a-year, replacements purchased, hay and pasture feeding, limited facilities.

(2) 400 ewes, multiple lambing, January, May, and September (three lamb crops in two years), replacements raised, hot house lambs sold, semi-confinement, excellent facilities.

(3) 600 ewes, once-a-year lambing, replacements purchased, limited facilities, winter pasture.

(4) 1,200 ewes, multiple lambing (three lamb crops in two years), replacements purchased, semi-confinement, highly mechanized facilities for low labor requirement.

(5) 3,000 ewes, group lambing--once-a-year 1,000 in each group--January, March, and May, most replacements raised, extensive low cost facilities.

(6) 3,000 ewes, multiple lambing (three lamb crops in two years), replacements raised, extensive facilities.

(7) 6,000 ewes, range operation (northern area), once-a-year lambing, sell feeder lambs and replacement ewes.

(8) 1,000 ewe unit, range operation (southwestern area), multiple lambing, replacements raised, feed out lamb in custom feedlot.

(9) replacement ewe--specialized ewe replacement unit could be adapted to several of the above systems.

(10) expansion plan 400 to 1,200 ewes, 12-year outline of possible year by year growth from a part-time flock into a full-time 1,200 ewe operation.

Copies of these systems can be obtained from Sheep Industry Development, Inc., 200 Clayton Street, Denver, Colorado 80206.

IV IMPROVED RETURNS THROUGH INCREASED LAMB PRODUCTION

As indicated previously, one of the keys to lowering the cost of production for wool and lamb and improving the profitability of sheep production in the United States is to concentrate on improved lamb production per ewe. Although this may result in lowered wool production per ewe, total wool production may increase if the long-term decline in sheep numbers can be reversed. In order to study the effect of this seemingly contradictory course of action (that is, increasing lamb production but decreasing wool production per ewe), an analysis is made of one of the model sheep management systems mentioned in Section III.

Model sheep management system number four is a 1,200 ewe unit designed to be operated as a family farm providing full-time employment for the farm operator, assisted in peak periods by his family. This semi-confinement sheep production unit is designed to maximize the use of silage and labor-saving facilities. The goal is to produce three lamb crops in two years selling nearly one and two-thirds lambs per ewe per year at the expected level of production. All lambs are sold as choice or prime market lambs and all replacement ewes would be purchased. In the outline for this operation, information is provided on selection and culling, expected production levels, management, feeding, health, marketing, facilities and equipment costs, and estimated budgets.

Estimated returns above cash expense for this 1,200 ewe operation with lamb priced at $28 cwt. and wool at $0.70 per lb. are $17,200 at the low level of production; $25,600 at the expected level of production; and $32,800 at the high level of production (Table 8). Lambs marketed per ewe per year at low, expected, and high levels of production are 1.2, 1.63, and 2.0, respectively.

Wool production was assumed to be 9 lbs. per ewe per year under the low level of production, 8 lbs. per ewe per year under the expected level of production, and 7 lbs. per ewe per year under the high level of production. In other words, the assumption is made that as lamb production increases the amount and value of wool produced will decrease. However, the decrease in value of wool produced is offset to a large extent in most cases by the increased government lamb payment brought about by the increased number of lambs sold. In fact, at the price levels used, there is very little reduction in the total combined value of government wool and lamb payments from one production level to another.

It can readily be seen that total receipts increase markedly as lambs marketed per ewe per year increased from 1.2 to 2.0. Estimated cash expenses also increase but not nearly as rapidly as receipts and estimated returns above cash expenses. The estimated return above cash expenses is that amount that is available for debt payments (principal and interest), income taxes, and/or purchase of new equipment, etc.

Admittedly this system is quite different from the usual sheep operation, but it is possible that a somewhat radical departure from current operating methods will be necessary if improvement is to be obtained in the profitability of the sheep industry in the United States.

The system for this budget requires considerable investment in buildings and facilities. The design and estimated new costs for these facilities were developed at a workshop for this purpose held at Ames, Iowa, in mid-1971. The estimated new cost of buildings and related fixtures total $71,500 plus $9,500 for equipment--a total for buildings and equipment of $81,000 or $67.50 per ewe (Table 9). This highly mechanized system is admittedly high in investment cost compared with traditional sheep production facilities, but is designed to provide maximum labor and productive efficiency.

Estimated average investment in land, livestock, buildings, and operating capital for this system is $121,500. This is equivalent to $101.25 per ewe.

The depreciation on buildings and equipment of $5,600 would, of course, have to be deducted from the estimated return above cash expense. Net return to labor and management after deducting this depreciation plus 10 percent interest on investment on land, livestock, buildings, and equipment ranges from a loss of $600 to a high of $15,000 (Table 10). Calculated on a per hour basis, the estimated return to labor and management ranges from a loss to $6 per hour with an expected return of $3.12 per hour. If either of the last two levels of return can be achieved, sheep production units such as this will be competitive with most other livestock enterprises in the United States today.

Several other measures of return are also calculated in Table 10. These include estimated returns to land, labor, and management and percent return on average investment. The former which, in effect, assumes that the land is owned (and that no other return with the exception of appreciation in value is expected from the land) ranges from a low of $4,800 to a high of $20,400. Percent return on the average investment increases even more markedly as production levels of lamb increase. Assuming a $10,000 wage for the operator, the estimated percent return on the average investment is 1.3 percent at the low level of production, 8.2 percent at the expected level of production, and 14.2 percent at the high level of production.

These estimated budgets and returns have been calculated on the basis of prices for lamb of $28 per hundred and price of wool of $0.70 per pound (net after production program deductions and including Federal payment). Changes in wool and lamb prices would, of course, have a marked effect on the returns from this type of sheep production unit. For example, a change in lamb price from $28 per cwt. to $24 per cwt. would reduce estimated returns above cash expenses by $8,600 at the expected level of production or from $25,600 to $17,000. At the same time, a drop in wool prices from $0.70 per pound to $0.50 per pound at the expected production level would reduce returns by approximately $2,600 or from $25,600 to $23,000 (Table 11).

It should also be noted that estimated return above cash expenses improves markedly as lamb production increases.

Estimated percent return on average investment, which is the return to capital after deductions are made from cash receipts for cash expenses, depreciation, and a $10,000 wage for the operator, is possible only where high levels of lamb production are obtained and/or when lamb prices are quite high. For example, the estimated percent return on average investment for a 1,200 ewe flock is only 1.3 percent at the low production level, with lambs priced at $28 per cwt. and wool at $0.70 per pound; but is estimated to be 10 percent at the high lamb production level with lamb prices at $0.28 per pound and wool prices at $0.30 per pound (Table 12). The level of lamb production and the price of lambs have a much more significant effect on the estimated percent return on average investment than does the price of wool and production of wool per ewe.

In summary, it appears that good returns above cash expenses can be realized with moderate levels of lamb production and price. However, excellent returns can be achieved only with the combination of good to excellent levels of lamb marketings per ewe per year and a price for lamb in the $24 to $28 range or above. Wool production and wool price levels are not nearly as critical to the success of this model system. Other model systems outlined also exhibit the same characteristics indicating that improved profit from sheep production is heavily dependent upon improved production of market lamb per ewe and adequate prices for lamb.

V MARKETING

Any consideration of earning a living from production of sheep should be preceded by a thorough exploration of the possible avenues of marketing available. First of all, the availability of a market must be considered. If there is one available, consideration should be given to the competitive situation with regard to the market. While competition among buyers is usually most desirable, it may be in specialized instances that satisfactory contract arrangements can be worked out with a single buyer.

In the event that no suitable market outlet is available, it may be necessary to seek out new markets for the product or to join with an already existing producer marketing group.

Other factors to be considered are the distance to the market, the cost of shipping and handling, and the products desired by the market. This last item includes the grade of lamb desired and weight of carcass. Some markets severely discount carcasses weighing over 45-50 pounds. Thus, it is important for the producer to know at what weight lambs should be finished and sent to market.

One of the marketing problems faced by the lamb producer is that the retail prices for lamb have increased sharply as outlined in Section I. Higher marketing costs and increased processing costs have resulted in a decline in the producer's share of the consumer dollar spent for lamb. In the past 20 years, the producers' share of the retail dollar spent for lamb has declined by 20 percent. Part of the reason for the increased marketing costs is the fact that it requires considerably more labor per cwt. to process a small lamb carcass than it does a larger hog or beef carcass. In general, it costs over three times as much per cwt. to slaughter a lamb carcass as it does a beef carcass. Also, commission and/or yardage costs are higher on a per cwt. basis for lambs than for either hogs or cattle. It has been reported that the commission and yardage costs for sheep are 1.5 times as great as for hogs and 2.5 times as great as for cattle on a per cwt. basis. In addition, transportation costs per cwt. also tend to be somewhat higher for lambs than for larger animals (22).

Processing costs are also increased by the somewhat erratic supply of lambs at various times of the year. This makes it difficult to keep a processing plant in full-scale operation during some periods. There has been an effort to reduce costs in the packing industry by shifting from small high cost slaughter plants to a few larger, specialized lamb kill plants. Larger plants can use specialized equipment which reduces the cost of slaughtering lamb, but this may be offset somewhat by higher labor costs (per hour) and higher transportation and assembly (procurement) costs.

Other important problems in the marketing of lamb are the image of lamb held by consumers and the fact that only about 37 percent of all U. S. households use lamb. Both users and non-users have a common image of lamb--that it is (1) too high cost; priced higher than other meats; (2) is fatter than they would like it to be; and (3) lacks versatility in menu planning (22). A portion of the problem of low utilization by consumer households is the fact that lamb is often not available in smaller towns and cities. Many retail stores do not handle lamb at all because of the low volume.

There are some positive factors in relation to lamb marketing, however. These include the fact that 60 percent of families with over $10,000 income use lamb. Also, nearly half of city and suburban households use lamb. Thus, the continuing increase in family income and the trend to a greater proportion of the population living in city and suburban areas should help maintain per capita lamb consumption. Finally, the expanding total market for red meat provides an opportunity for lamb to participate in a growing market, if some of the problems mentioned above can be overcome.

VI PROPOSAL FOR AN INTEGRATED SHEEP PRODUCTION AND MARKETING SYSTEM

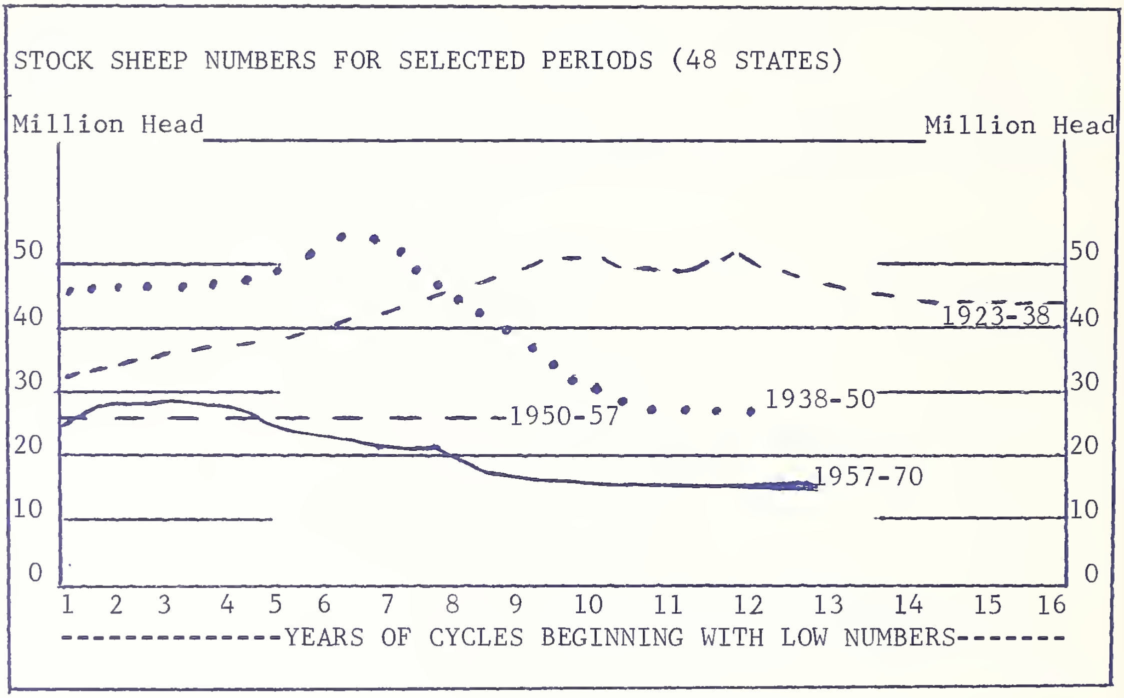
Many factors have undoubtedly contributed to the precipitous decline in U. S. sheep numbers over the past 30 years. Included in these are predator and labor problems; declining per capita consumption of lamb; development of synthetic substitutes for wool; etc. But most importantly, the traditional sheep production and marketing system has prevented many of those engaged in the sheep industry from obtaining an adequate return for their labor, management, and capital.

Sheep production systems proposed in this report are designed to provide some avenues of improvement in the production phase, but improvements in marketing are also badly needed. As indicated in Section V, more efficient slaughtering and distribution coupled with better coordination of production and marketing are needed to reduce farm to retail margins. At the same time, it should be possible to reduce retail price to the consumer so that lamb is more competitive with other red meats.

One possible method of improving coordination and marketing efficiency would require the involvement of a supermarket chain, a slaughtering-fabricating plant, and a group of efficient producers with sufficient numbers of lambs to supply the market. The supermarket chain would estimate the quantity and specify the quality of lamb required on a weekly or bi-weekly basis. The producer group would agree to supply the required lamb and attempt to schedule their production as nearly as possible to meet the requirements of the market. Producer-raised lambs might be augmented by lambs purchased by the producer group in order to insure that market requirements are met. The slaughtering and fabricating plant could be built by the producer group; custom-hired to process all lambs; or a contract entered into with an existing packer to process and market the lambs. In this way, it is estimated that 80 to 100 large producers could provide enough lamb to utilize the capacity of a specialized lamb slaughtering facility and perhaps supply most of the lamb for one or more supermarket chains.

This system would have advantages of (1) market-oriented production, (2) relatively more stable prices for producers, marketers, and consumers, (3) full utilization of slaughtering and fabricating capacity, and (4) more uniform quality to the consumer.

CHART 1.



STOCK SHEEP NUMBERS FOR SELECTED PERIODS (48 STATES)

SOURCE: Economic Research Service, U. S. Department of Agriculture

CHART 2. TRENDS IN NUMBERS OF U. S. STOCK SHEEP AND U. S. FARM PRICE OF LAMB, 1942-1972

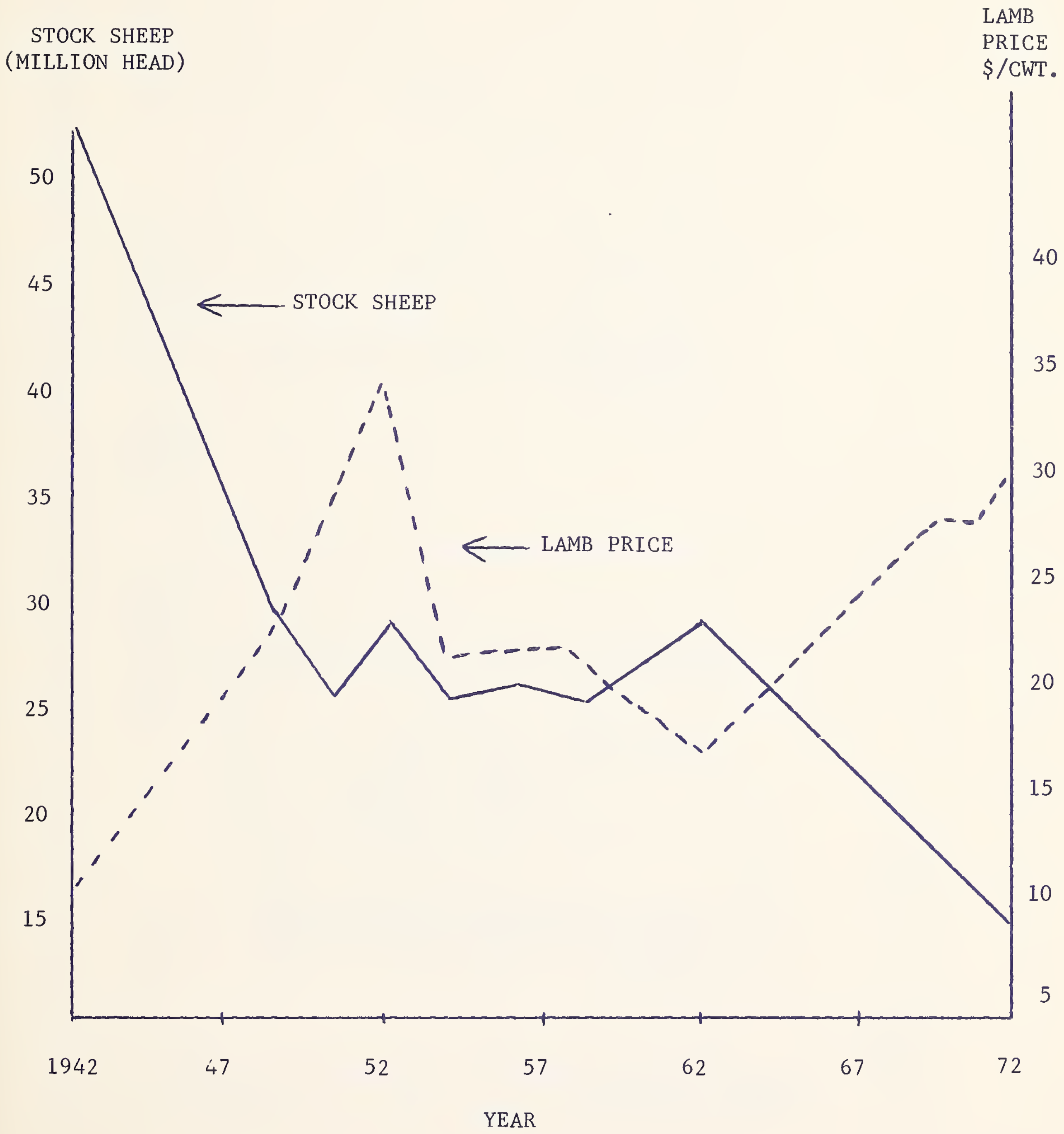


CHART 3. RETAIL MEAT PRICES*

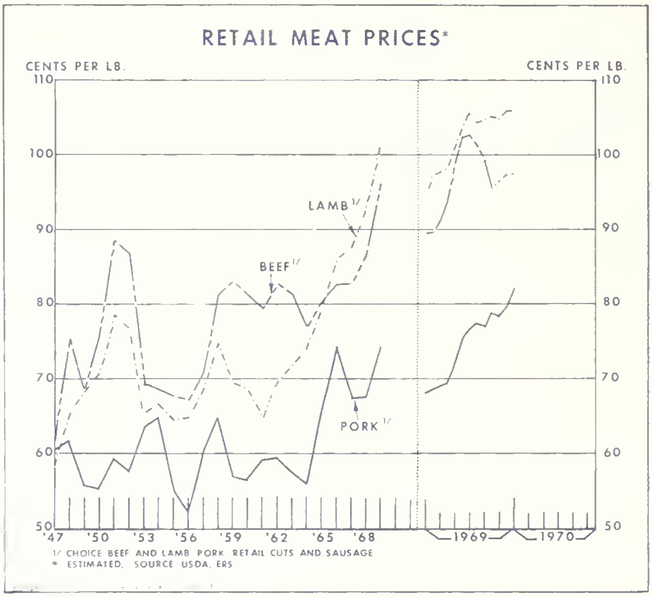
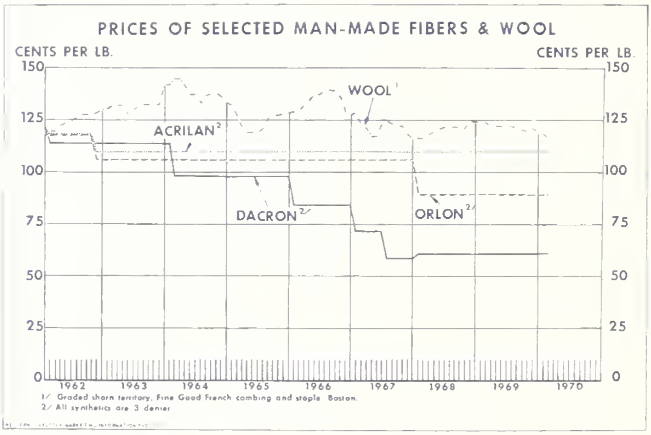


CHART 4. PRICES OF SELECTED MAN-MADE FIBERS AND WOOL*



*Source: Western Livestock Marketing Information Project, Denver, Colorado

TABLE 1. RETURNS TO ALL LABOR & MANAGEMENT PER EWE PER YEAR AND PER HOUR - SELECTED STATES, 1968-1970

Location	Type Flock	Returns to All Labor and Mgt Per Ewe/Year1/	Hours of Labor Per Ewe	Return to Labor and Mgt. Per Hour	Lamb Price2/ Cwt.	Reference3/
		$	Hrs.	$	$	
EAST						
Ohio	Farm - intensive management	13.75	3.0	4.58	25	(1)
Virginia	Farm - 3 lambings in two years	12.31	7.5	1.64	25	(2)
Virginia	Farm - normal lambing, high production	8.16	5.2	1.57	27	(2)
Virginia	Farm - normal lambing, average production	4.24	4.5	0.94	25	(2)
CENTRAL						
Kansas	Farm - "typical"	6.88	N/A	N/A	28	(5)
South Dakota	Farm	5.30	2.0	2.65	27	(3)
South Dakota	Range	4.70	1.6	2.95	27	(3)
Texas	Range - average management	5.99	2.0	3.00	27	(4)

1/ Adapted from original data.
2/ Used by original author in making calculations (to nearest dollar).
3/ See Selected References.

TABLE 1. RETURNS TO ALL LABOR & MANAGEMENT PER EWE PER YEAR AND PER HOUR - SELECTED STATES, 1968-1970 (Continued)

Location	Type Flock	Returns to All Labor and Mgt Per Ewe/Year[1]	Hours of Labor Per Ewe	Return to Labor and Mgt. Per Hour	Lamb Price[2] Cwt.	Reference[3]
		$	Hrs.	$	$	
WEST						
California	Range	5.08	3.0	1.69	23	(6)
Idaho	Farm - confinement	2.70	5.0	0.54	28	(9)
Montana	Farm	-2.49	3.4	-0.73	21	(7)
Oregon	Farm - improved pasture	0.31	4.3	0.07	25	(8)
Utah-Nevada	Range	10.37	5.0 (estimated)	2.07 (estimated)	27	(10)
Wyoming	Range	3.13	2.9	1.09	24	(11)

---

[1] Adapted from original data.

[2] Used by original author in making calculations (to nearest dollar).

[3] See Selected References.

TABLE 2. LABOR AND MANAGEMENT RETURNS FOR VARIOUS TYPES OF U. S. COMMERCIAL FARMS 1960-64, 1968 AND 1969 1/

Commercial Farm Type	Returns to Operators, Labor, & Mgt. 2/		
	Avg. 1960-64	1968	1969
	$	$	$
Migratory Sheep Ranches - Utah and Nevada	-2,881	5,678	8,480
Northern Plains Cattle Ranches - Eastern Montana, Western S. D., Northeastern Wyoming	-2,231	-2,924	-1,911
Northern Rocky Mountain Cattle Ranches - Western Montana, North Central Idaho	-785	2,989	4,828
Southwest Cattle Ranches - Southwest Texas, Southern N. Mex.	-16,706 (1965-67)	-19,945	-20,709
Southwest Sheep Ranches - Southwest Texas, Southern N. Mex.	N/A	-6,643	N/A
Tobacco-Livestock Farms - Bluegrass Area, Kentucky	1,710	2,268	2,589
Egg Producing Farms - New Jersey	747	3,606	11,052
Hog-Beef Fattening Farms - Corn Belt	N/A	2,270	N/A
Dairy Farms, Grade A - Wisconsin	N/A	6,787	N/A

1/ Adapted from (12).

2/ Net farm income less a charge of 6 percent on total capital.

TABLE 3. NUMBERS OF STOCK SHEEP ON FARMS AND PERCENT DECREASE 1961 TO 1970

12 Leading Sheep States and U. S.

State	1961 [1/]	1970 [2/]	Decrease 1961 to 1970
	(Number in 1,000's)		Percent
Texas	5,614	3,560	36.6
Wyoming	2,115	1,784	15.7
California	1,657	1,185	28.5
South Dakota	1,482	1,010	31.9
Montana	1,478	1,051	28.9
Utah-Nevada	1,471	1,152	21.7
Colorado	1,392	823	40.9
New Mexico	1,139	791	30.6
Iowa	1,109	651	41.3
Idaho	1,018	632	37.9
Oregon	846	449	47.0
Ohio	790	605	23.4
12 States Total	20,111	13,693	31.9
U. S.	28,556	17,578	38.4

[1/] (15)
[2/] (16)

TABLE 4. ESTIMATED RETURNS TO LABOR AND MANAGEMENT FOR VARIOUS FARM ENTERPRISES
Willamette Valley, Oregon, 1970 [1/]

Enterprise	Basic Unit	Returns to Labor and Management Total $	 Per Hour $
Ewe Flock	200 ewes	61	0.07
Beef, Cow-Calf	100 cows	655	0.80
Hogs-Feeder Pig	75 sows	10,698	6.92
Broilers	50,000 birds	-1,070	-1.93

[1/] Adapted from (8).

TABLE 5. RETURNS TO LABOR AND MANAGEMENT - SELECTED FARM ENTERPRISES, IOWA 1965 1/

Enterprise	Return to Labor and Management 2/	Hours of Labor 2/	Return Per Hour
	$	Hr.	$
Litter of Pigs	192	84	2.29
Fed Steers	114	78	1.46
Dairy Cows	206	169	1.22
Beef Cows	67	96	0.70
Ewes	90	139	0.65
Hens	81	141	0.58
Turkeys	42	93	0.45

1/ Adapted from (17).
2/ Per $1,000 gross income.

TABLE 6. COMPARISON OF REPRODUCTIVE PERFORMANCE OF EWES ON ACCELERATED AND ONCE-A-YEAR PROGRAMS [1]

	Fall Lambing Once-A-Year	Accelerated Ewes 1967-1970	1966-1970
Average No. Ewes	100	93.3	93.3
Ewe Lambed (%)	95	88.9	80.6
Lamb Crop (%)	124.5	197.5	166.0
Lamb Crop of Ewes Lambed	131.0	207.3	192.5
Lamb Crop Weaned	119.5	182.9	154.3
Lamb Death Loss (%)	5.0	9.3	9.3

---

[1] Source (20)

TABLE 7. ANNUAL RECEIPTS AND RETURNS FOR EWES (100 EWES/FLOCK) ON ONCE-A-YEAR AND ACCELERATED PROGRAMS COMPARED 1/

	Fall Lambing Once-A-Year	Accelerated Ewes (Extra Feed)	
Receipts	$3,658.81	$4,927.72	$4,927.72
Ewe Feed Cost	1,600.00	1,717.00	1,942.00
Lamb Feed Cost	966.09	1,465.03	1,465.03
Returns Above Feed Cost	$1,092.72	$1,745.69	$1,520.69
Returns Above Feed Cost/ Ewe	10.93	17.46	15.43

1/ Source (20)

TABLE 8. ESTIMATED BUDGETS

1200 Ewe Operation
(All figures to nearest $100)

Lambs Marketed/Ewe/Yr.	Low 1.2	Expected 1.63	High 2.0	Your Operation ______
Estimated Receipts:	$	$	$	$
Lambs (110# lamb net @ $28/cwt.)	44,400	60,100	73,900	______
Wool # @ 70¢/# 1/	7,600	6,700	5,900	______
Unshorn lamb incentive pay $1.20/hd.	1,700	2,300	2,900	______
ESTIMATED TOTAL RECEIPTS	53,700	69,100	82,700	______
Estimated Cash Expenses:				
Feed 2/	23,200	28,600	33,600	______
Ram replacement - net 3/	500	600	700	______
Ewe replacement - net 3/	5,500	6,200	6,900	______
Taxes, repairs, insurance	2,500	2,500	2,500	______
Marketing charge	1,400	2,000	2,400	______
Miscellaneous expense 4/	3,400	3,600	3,800	______
SUB-TOTAL CASH EXPENSE 5/	36,500	43,500	49,900	______
Estimated Return Above Cash Expense 6/	17,200	25,600	32,800	______

1/ Net after promotion program deduction and including incentive payment.
2/ Does not include charge for land or labor for home-grown corn silage and grain for ewes. Feed purchased for lambs including creep feed is included in feed expense in this model.
3/ Cost of replacements less amount received for culls.
4/ Includes electricity, shearing, dip, vet., & med., etc.
5/ Except hired labor and interest expense, if any.
6/ Available for debt (principal and interest) payments, family living expenses, income taxes, and/or purchase of new equipment, etc.

TABLE 9. FACILITIES AND EQUIPMENT
ESTIMATED NEW COST

(1200 Ewes)

Buildings and Related Fixtures	$
Pole Barns - 18,000 sq. ft. @ $1.50/sq. ft.	27,000
Management Room - 3,600 sq. ft. @ $2.25/sq. ft.	8,100
Lamb Feeding Area - 4,500 sq. ft. @ $3.90/sq. ft.	17,550
Bunker Silo - 2,000 tons @ $5/ton	10,000
Feed Bunks (w/o cover) & Auto Feeder - 450 sq. ft. @ $12/ft.	5,400
Creep Feeders	200
Waterers - 9 @ $50	450
Roads, Fencing, and Gates	2,600
Lambing Pens	200
SUB-TOTAL BUILDINGS AND RELATED FIXTURES	71,500
Equipment	
Forage Wagons (new - $3,000; used - $1,000)	4,000
Tractor (used)	1,500
Manure Spreader (used)	800
Front-End Loader (used)	400
Scraper Blade (used)	200
Ground Feed Wagon (used)	800
Augers to Creep Feeders	300
Miscellaneous Equipment	1,500
SUB-TOTAL EQUIPMENT	9,500
TOTAL BUILDINGS, FIXTURES, EQUIPMENT	81,000
Building and Equipment Cost/Ewe	$67.50

TABLE 10

ESTIMATED BUDGETS - 1200 EWE OPERATION

Lambs Marketed/Ewe/Yr.	Low 1.2	Expected 1.63	High 2.0	Your Operation
	$	$	$	$
Estimated Return Above Cash Expense	17,200	25,600	32,800	
Depreciation Buildings and Equipment	5,600	5,600	5,600	
Interest on Inv. (Land) @ 10% 1/	5,400	5,400	5,400	
Interest on Inv. (Other) @ 10% 2/	6,800	6,800	6,800	
Estimated Return to Labor and Management	(600)	7,800	15,000	
Estimated Return Per Hour to Labor and Management	Loss	3.12	6.00	
Estimated Return to Land, Labor, and Mgt. 3/	4,800	13,200	20,400	
SUB-TOTAL CASH EXPENSE	36,500	43,500	49,900	
Labor Charge - 2,500 hrs. @ $4/hr.	10,000	10,000	10,000	
Depreciation	5,600	5,600	5,600	
ESTIMATED TOTAL EXPENSE	52,100	59,100	65,500	
Return on Avg. Investment	1,600	10,000	17,200	
Percent Return on Avg. Investment ($121,500)	1.3	8.2	14.2	

1/ $54,000-land. If the land is being held for real estate appreciation purposes and is increasing in value, the interest on investment charge might be considerably lower. For example, if land is appreciating in value 6% per year, interest on investment could be reduced by $3,200 per year.

2/ $67,500-livestock, buildings, equipment, and operating capital.

3/ Receipts less cash expenses, depreciation and interest on investment in livestock, buildings, equipment, and operating capital.

TABLE 11. ESTIMATED RETURN ABOVE CASH EXPENSE 1/ OVER A RANGE OF LAMB AND WOOL PRICES FOR VARIOUS PRODUCTION RATES

1200 Ewes - Intensive Management

Lamb Price/Cwt.	Wool Price/Lb. 2/	Lambs Marketed Per Ewe/Yr.		
		1.2	1.63	2.0
		$	$	$
20	30	(800)	3,300	6,700
20	50	1,800	5,800	9,200
20	70	4,500	8,400	11,700
24	30	5,580	11,900	17,200
24	50	8,200	14,400	19,700
24	70	10,900	17,000	22,200
28	30	11,900	20,500	27,800
28	50	14,500	23,000	30,300
28	70	17,200	25,600	32,800
32	30	18,200	29,100	38,400
32	50	20,800	31,600	40,900
32	70	23,500	34,200	43,400
Lbs. Wool Sold/Ewe		9	8	7

1/ Amount available for debt (principal and interest) payments, family living expenses, income tax, and/or purchase of new equipment, etc.

2/ Unshorn lamb incentive payments varied in same proportion as wool price.

TABLE 12. RETURN ON AVERAGE INVESTMENT 1/
OVER A RANGE OF LAMB AND WOOL PRICES
FOR VARIOUS LEVELS OF PRODUCTION

1200 Ewes - Intensive Management

Lamb Price/Cwt.	Wool Price/Lb.	Lambs Marketed Per Ewe/Yr.		
		1.2	1.63	2.0
		%	%	%
20	30	Loss	Loss	Loss
20	50	Loss	Loss	Loss
20	70	Loss	Loss	Loss
24	30	Loss	Loss	1.3
24	50	Loss	Loss	3.4
24	70	Loss	1.2	5.4
28	30	Loss	4.0	10.0
28	50	Loss	6.1	12.1
28	70	1.3	8.2	14.2
32	30	2.1	11.1	18.8
32	50	4.3	13.2	20.8
32	70	6.5	15.3	22.9
Lbs. Wool Sold/Ewe		9	8	7

1/ Percent return on average investment = total receipts less cash expenses, depreciation, and $10,000 for operator's labor divided by average investment of $121,500.

SELECTED REFERENCES

(1) MOORE, J. E., "Economic Considerations in the Sheep Business Including Maximum Use of Pasture in Intensified Operation." Paper presented at Sheep Industry Development Symposium on Production and Business Management held at Ohio Agricultural Research and Development Center, Wooster, Ohio, December 4-6, 1968.

(2) MOORE, J. M., AND ALLEN, G. A., "Sample Sheep Production Budgets." Paper presented at Sheep Industry Development Symposium on Production and Business Management held at Ohio Agricultural Research and Development Center, Wooster, Ohio, December 4-6, 1968.

(3) AANDERUD, W. G., "Economics of Intensive Sheep Production." Paper prepared for Illinois Sheep Day, University of Illinois, Urbana, Illinois, December 12, 1969.

(4) KENSING, R. H., "Estimated Annual Cost & Returns of Breeding Ewe," Agricultural Extension Service, Texas A&M University, San Angelo, Texas, Mimeo, February 1970.

(5) THOMAS, W. B., AND WHIPPS, F. E., "Lamb and Wool Production on a Business Basis," Department of Economics, Cooperative Extension Service, Kansas State University, Manhattan, Kansas, Bulletin C-390, November 1970.

(6) SWENERTON, A. K., "Sample Cost of Range Market Lamb Production in Solano County," Extension Service, University of California, Mimeo, Berkeley, California, March 1968.

(7) QUENEMOEN, M. E., JOHNSON, G. R., and EGAN, C. E., "Costs and Returns Estimates for a Farm Flock Sheep Enterprise in Southcentral Montana," Cooperative Extension Service, Montana State University, Bozeman, Montana, Bulletin C-1102, January 1970.

(8) MOSHER, W., AND MILES, S., "Sheep Enterprise Data Sheets," Cooperative Extension Service, Oregon State University, Corvallis, Oregon, Mimeo, November 1970.

(9) KENNEDY, V. D., "Farm Management Notes," Agricultural Extension Service, College of Agriculture, University of Idaho, Boise, Idaho, Mimeo, November 1970.

(10) GOODSELL, W. D., and BELFIELD, M. J., "Costs and Returns Migratory Sheep Operations - Utah, Nevada, 1969," U. S. Department of Agriculture Economic Research Service, FCR-76, July 1970.

(11) STEVENS, D. M., "An Economic Analysis of Wyoming Sheep Industry -- 1960, 1964, 1968." Agricultural Economics Division, University of Wyoming, Laramie, Wyoming, Bulletin 546, June 1971.

(12) "Costs and Returns," Series, ERS-USDA, Washington, D. C., FCR-65, 68, 71, 72, 73, 76, 77, 78; 1969-1971.

(13) "Beef Production on a Business Basis," Cooperative Extension Service, Kansas State University, Manhattan, Kansas, Bulletin C-387, 1970.

(14) "Agricultural Statistics - 1962," SRS-USDA, Washington, D. C.

(15) "Agricultural Statistics - 1970," SRS-USDA, Washington, D. C.

(16) "Iowa Farm Outlook," Iowa State University Newsletter, Iowa State University, Ames, Iowa.

(17) STONEBERG, E. G., and HOWELL, H. B., "Economic Considerations in Planning Your Livestock Program," Cooperative Extension Service, Iowa State University, Ames, Iowa, FM-1454 (Rev.), 1965.

(18) STEVENS, D. M., "Mountain Valley Cattle Ranching - An Economic Analysis," Agricultural Experiment Station, University of Wyoming, Laramie, Wyoming, Bulletin 485, April 1968.

(19) BOYKIN, C. C., and FORREST, N. K., "Economic and Operational Characteristics of Livestock Ranches - Edwards Plateau and Central Basin of Texas," Texas Agricultural Experiment Station, Texas A&M University, College Station, Texas, MP-978, January 1971.

(20) AREHART, L. A., and BANBURY, E. E., "Colby Sheep Experiments - 1971 Report," Colby Branch, Agricultural Experiment Station, Kansas State University, Manhattan, Kansas, Report of Progress 172, 1971.

(21) KENSING, R. H., "Production, Management, and Cost Comparison of Accelerated Lambing and Early Weaning on Southwest Range Operations." Paper presented at Sheep Industry Development Symposium on Production and Business Management held at Ohio Research and Development Center, Wooster, Ohio, December 4-6, 1968.

(22) ARMSTRONG, J. H., COURTENAY, H. V., and JUDGE, M. O., "Sheep and Lamb Marketing," Cooperative Extension Service, Purdue University, Lafayette, Indiana, Special Publications.

(23) FREDERIKSEN, K. R., PRICE, D. A., and BELL, T. D., "Rear Those Extra Lambs," Idaho Current Information Series No. 121, March 1970.

Cooperative Extension Work: United States Department of Agriculture
and State Land-Grant Universities Cooperating.